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(54) Ankle support bandage

(57) The bandage 1 comprises a socket-shaped main body for enclosing the ankle as shown, such body being openable and being made from resilient, heat insulating material and, furthermore, having a pocket 8, 9, 10 for containment of a stabilising element 11. The said element is a rigid body formed of sheet material and comprises two longitudinal stay portions 18, a portion 19 which joins the stay portions at their upper ends and narrower, heel support portions 20 at the lower ends of the stay portions. In use, the joining portion 19 is at the back of the leg.

Fig.1

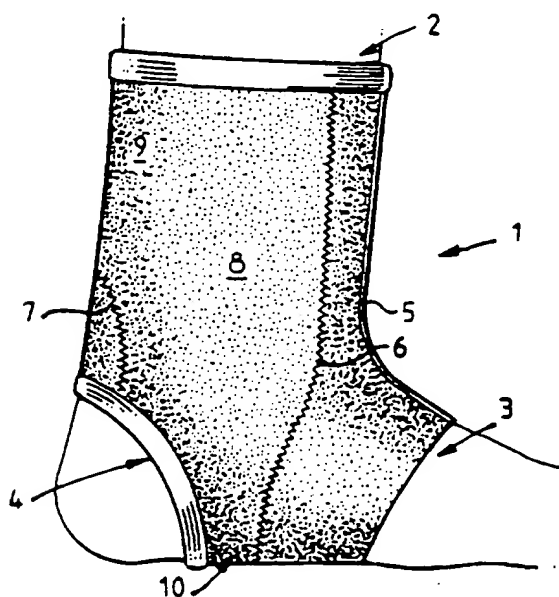
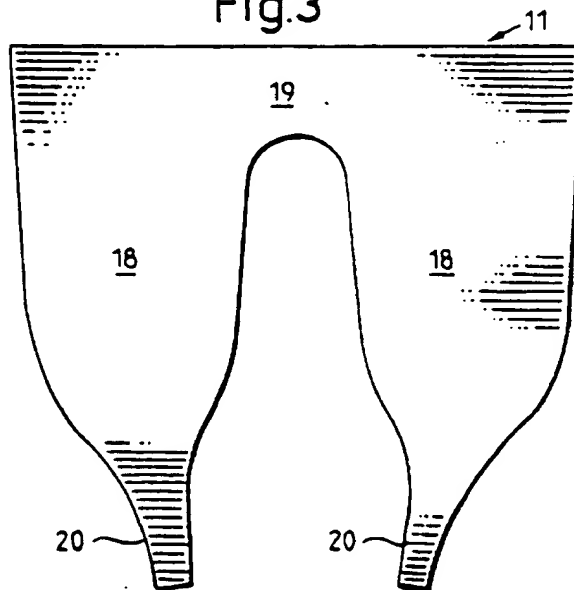


Fig.3



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Fig.1

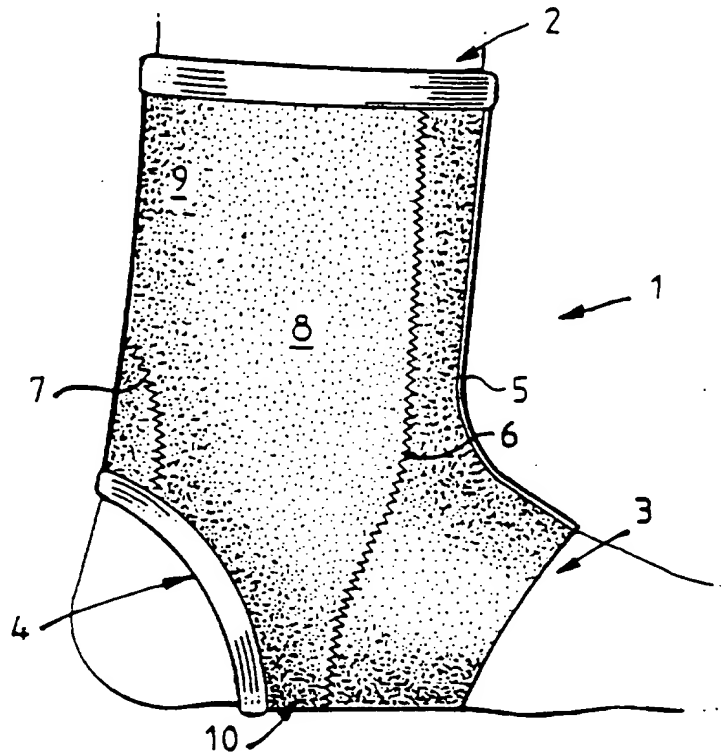


Fig. 2

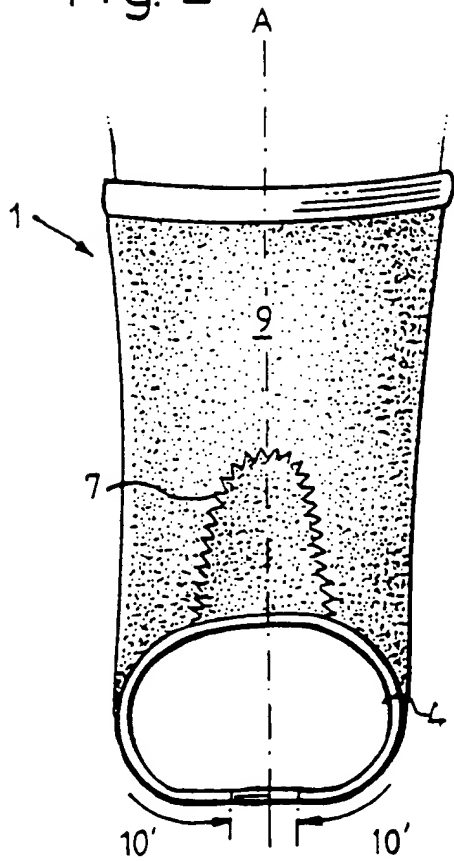
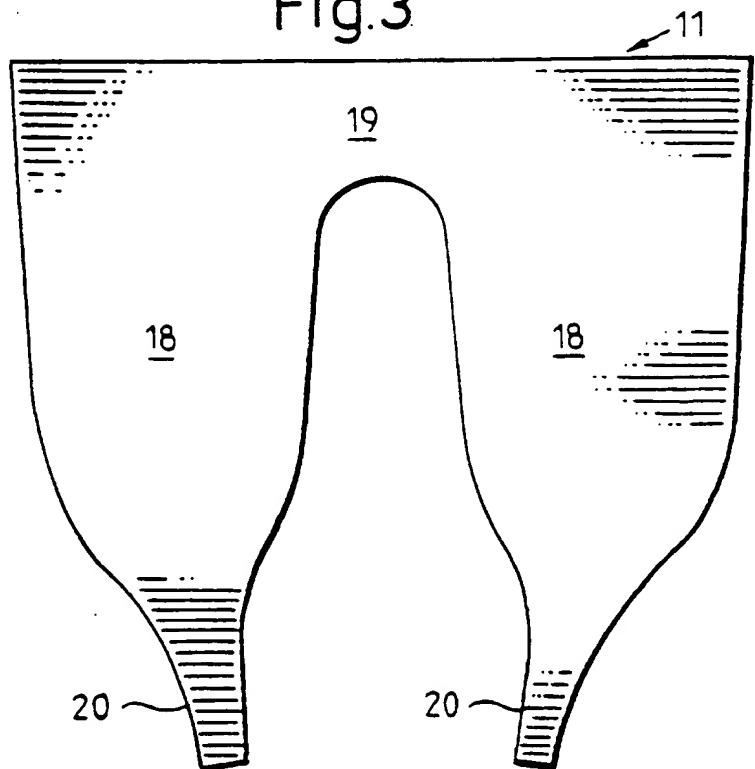


Fig.3



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ANKLE BANDAGE

This invention relates to an ankle bandage comprising a generally socket-shaped main body for surrounding over and around the ankles and below the heel region of a user, the said main body being provided with an opening, being  
5 made from a flexible, resilient, heat insulating material and having a pocket for a stabilizing element.

Such a bandage is shown in US-A-5 000 195, wherein stabilizing elements, being comprised of U-shaped stays are placed in U-shaped pockets which are located on each side  
10 of the bandage. The stays extend from the upper part of the bandage to immediately below the ankles.

A bandage of this kind is, however, not capable of giving sufficient stability and control of the heel bone, although a flexible but non-resilient band is intended to  
15 surround below the heel region. The reason for this is i. a. that the band due to its flexibility allows undesired movement of the heel bone during walking. By the shapes of the stays with each having two free ends which are directed upwards, further an unstable bandage will result  
20 which further does not provide sufficient stability at the region of the ankle.

US-A-5 266 875 concerns a shoe having a integral ankle support. For that purpose a stabilizing element surrounds below the heel region of the foot and extends upwards to  
25 an area above the ankles. The upwardly extending parts are comprised of two free ends and the portion surrounding the heel has a considerable width in the longitudinal direction of the foot, whereby on the one hand the movability of the foot is reduced and on the other hand  
30 risk of abrasion sores occurs, particularly against middle foot bone V (Metatarsal V) at the outside of the foot.

The aim of this invention is to eliminate the drawbacks of the prior art and to provide an ankle bandage which gives full support for the ankle region at the same  
35 time as it gives a very good support for the heel bone and

simultaneously good movability of the foot in a vertical plane through the lower leg and the foot (see A - A in Fig. 2), so as to allow relatively undisturbed walk, while maintaining the desired support of the ankle and foot area.

5       The invention provides an ankle bandage comprising a generally socket-shaped main body for surrounding over and around the ankles and below the heel region of a user, the said main body being openable, being made from a flexible, resilient, heat insulating material and having a pocket for  
10       enclosing a stabilizing element is a rigid supporting body, which is adjustable to the user and is manufactured from sheet material and comprises two stay portions, which in use of the bandage are arranged in a longitudinal direction from an area above the ankle region of the user and  
15       extending on the respective sides thereof and enclosing the ankles, a joining portion which joins the stay portions transversely at an upper one of their end portions side ways, and a heel support portion at the respective other, end region of the stay portion(s) with one part being  
20       arranged to be located below the heel bone region of the user, and wherein said heel support portion has a small width in said part and at least in a neighbouring part which is located against the outside of the foot.

      By the stabilizing element being a rigid support body  
25       made from sheet material comprising the stay portions, the joining portion as well as the heel support portion, an enclosing support structure is obtained giving very good rigidity in the upper part of the bandage, stability for the ankle region and the desired support for the heel bond.

30       By the heel support portion having a small width dimension, usually between about 0.7 to 1.8 cm width, support is obtained at the same time as the said movement in a vertical plane is essentially undisturbed. By also the part, most closely above the part of the heel support  
35       portion which is below the foot, having a small (corresponding) width, abrasive injuries are prevented,

particularly against middle foot bone V (Metatarsal V) which is located at the outside of the foot.

5 By the feature according to claim 2 simplicity is obtained in combination with ease of production and stability of the resulting bandage. By the new shape, which is adjusted to avoid affecting the achilles tendon, comfort is obtained as well as good function.

The feature according to claim 3 brings about particularly good comfort for the user.

10 The feature according to claim 4 allows easy adjustment to a particular patient and perfect fit for the individual user. When a patient has ceased to use the bandage it may be adjusted to and used by the next patient after reheating.

15 The feature according to claim 5 allows the support body to be heated up to its plastic temperature when it is enclosed inside the main body without need of hot water baths or the like.

20 Preferably the support body is comprised of a thermoplastic material such as Turbocast (reg. Trade Mark) which ensures the rigid properties at the temperature of use and the plastic properties in a reasonably heated state.

25 The feature according to claim 7 facilitates transport of the body moisture.

30 The feature according to claim 8 brings about comfort and reduced abrasion onto the patient at the same time as the support body maintains its plastic state (sufficiently high temperature) during a sufficiently long time to allow appropriate adjustment.

The feature according to claim 9 allows simple attachment of the bandage onto a patient.

35 The feature according to claim 10 allows reducing the thickness of the bandage below the heel region to a minimum thus enhancing comfort.

Further advantages are achieved by the features according to the other claims.

An example of a bandage according to the invention will now be described in greater detail with reference to the annexed drawing, wherein:

Fig. 1 shows in a side view an ankle bandage according to the invention applied onto the foot of a patient.

Fig. 2 shows the bandage according to Fig. 1 as seen from behind, and

Fig. 3 shows a supporting body for use in a bandage according to Figs. 1 and 2.

The ankle bandage 1 shown in Fig. 1 extends from a point 2 above the ankle area downwards in a socket-shaped manner and surrounds the underside of the foot of the patient. An opening at 3 in front of a line through the front edge of the skin bone is intended for the front part of the foot and the end of the heel is also free through an opening defined by the edge 4. The front side of the bandage may be opened at 5 so as to allow comfortable attachment by the patient by application from the back and from below and subsequently closing by e.g. Velcro (Reg. Trade Mark) fasteners.

The ankle bandage comprises a front seam 6 on each side, which extends essentially vertically on the socket-shaped portion of the ankle bandage and extends in a curved manner obliquely backwards towards the heel portion of the bandage such that the seam (at least at the outside of the foot) passes well behind metatarsal V. The ankle bandage also comprises a U-shape rear seam 7, which is located in the area of the achilles tendon. Altogether the seams 6 and 7 and the edge of the opening at 4 define a pocket for a supporting body whereby the pocket on its outside is limited by the outside material layer of the ankle bandage and on the inside by a possibly similar material layer which is sewn to the outside material at seams 6, 7 and 4.

This way a pocket is obtained having two pocket areas for the stay shaped portion of the supporting body (18 in Fig. 3), an area 9 for the joining portion (19 in Fig. 3)

and areas 10 for the heel support portion (portions) (20 in Fig. 3).

Fig. 2 shows the ankle bandage 1 as seen from behind with the opening for the heel 4 and the above located seam 7. At arrows 10', the extension of the heel support portion of the supporting body is illustrated below the heel region, thus showing that no overlap exists of the parts of the supporting body (20 in Fig. 3) in this area.

The supporting body which in Fig. 3 is shown in an initial position is made from a plane sheet material and is comprised of two essentially parallel stay portions 18 which in their upper parts are jointed sideways through a joining portion 19 to essentially flat inverted U-shape. At its lower regions the stay portions 18 convert into tapering portions 20 which in the using position together form the heel support portion after having been bent according to arrows 10' in Fig. 2.

The supporting body 11 does not necessarily have to be designed exactly as in Fig. 3. In case a thermoplastic material is used, which after heating to a plastic state (for example to 40 - 60°C) is to be adjusted to a patient, in integral body generally according to Fig. 3 is however preferred. The supporting body does not have to be symmetrical with respect to the inside and the outside of the foot and the parts 20 do not have to be of equal length. Due to ease of handling it is however suitable that the supporting body is symmetrical, since such a design eliminates the risk of erroneous turning inside out.

When adjusting an ankle bandage according to the invention onto a patient, the following steps are followed. A supporting body, e.g. as 11 in Fig. 3, is inserted into a correspondingly shaped container pocket in the main body of the ankle bandage, i.e. in the room 8, 9, 10 according to Fig. 1 and 2. Then the bandage is heated, either by dipping it into heated water or, if the material of the supporting body is of a type absorbing micro waves, in a

microwave oven in order to bring the supporting body  
11 to a temperature corresponding to a plastic state.  
Then the ankle bandage is applied from the back and below  
onto the foot of a patient by the tightening of Velcro  
5 fasteners, pressing on and possibly applying at least one  
stabilizing band, so that accurate adjustment of the  
bandage is achieved with respect to the shape of the ankle  
area of the particular patient. By also the inside of the  
bandage, i.e. the inner panel defining the pocket being  
10 made from a heat insulating material, there is no risk of  
discomfort or injury due to the possibly relatively high  
temperatures of the supporting body. The presence of  
insulating material at the inside as well as the outside  
also contributes to maintaining the supporting body 11 in  
15 the plastic state during a long period such as to ensure  
excellent adjustment of the ankle bandage.

A variety of modifications of this invention are  
envisaged within the scope of the claims. Thus in  
principle other materials may be used for the supporting  
20 body 11 beside thermoplastic materials, for example a  
plastics material which cures in another way. The  
supporting body may also consist of at least initially  
separate portions, which however need to be fixed relative  
to each other in connection with or after adjustment of  
25 the bandage onto the patient.

The dimensions of the bandage and particularly of the  
supporting body are chosen such as to ensure adequate  
fixation in the ankle area, but as is mentioned above, the  
design of the supporting body may be varied as long as the  
30 function of providing an ankle support, a joining portion  
and a supporting but not pivot limiting heel support  
portion is obtained.

In the embodiment shown the bandage comprises a heel  
opening, which also partially defines the pocket containing  
35 the supporting body. In another embodiment this opening  
may however, be smaller or possibly eliminated, and in such  
cases the pocket is defined by a continuation of the seam

7, which may have an extension mainly according to the lower part of the edge 4 in Fig. 1.

5 In order to allow transmission of body moisture, the supporting body is preferably perforated with a number of holes.

A suitable material for the main body is neoprene rubber having laminated layers of nylon jersey on the surfaces.

CLAIMS

1. An ankle bandage comprising a generally socket-shaped main body for surrounding over and around the ankles and below the heel region of a user, the said main body being  
5 openable, being made from a flexible, resilient, heat insulating material and having a pocket for enclosing a stabilizing element, wherein said stabilizing element is a rigid supporting body, which is adjustable to the user and is manufactured from sheet material and comprises  
10 two stay portions, which in use of the bandage are arranged in a longitudinal direction from an area above the ankle region of the user and extending on the respective side thereof and enclosing the ankles,  
a joining portion which joins the stay portions  
15 transversely at an upper one of their end portions side ways, and  
a heel support portion at the respective other lower, end region of the stay portion(s), with one part being arranged to be located below the heel bone region of the  
20 user, and wherein said heel support portion has a small width in said part and at least in a neighbouring part which is located against the outside of the foot.
2. Bandage according to claim 1, wherein said supporting body is an integral structure which before it is adjusted  
25 is in general flat inverse U-shape having the stay portions as shanks and the supporting portion as the mid portion, whereby the heel support portion is comprised of perspective portions adjoining to the stay portions at their free ends, and in use being arranged to be bent  
30 inwards towards each other under the heel region of the user.
3. Bandage according to claim 1 or 2, wherein in that the joining portion in use is arranged to be located at the

back of the leg.

4. Bandage according to any of the claims 1 -3, wherein the material of the supporting body is thermoplastic and formable at a temperature above the body temperature so that after heating it is possible to individually form the bandage with the supporting body inserted directly onto the user, such that the supporting body after cooling will be in a rigid non-plastic state.

5. Bandage according to any of the previous claims, wherein the material of the supporting body absorbs and therefore may be capable of being heated by micro waves.

6. Bandage according to any of the previous claims, wherein the material of the supporting body is comprised of Turbocast (Registered Trade Mark) or a similar plastics material.

7. Bandage according to any of the previous claims, wherein the sheet material of the supporting body is perforated with a number of holes.

8. Bandage according to any of the previous claims, wherein the pocket in the main body is formed between two layers of said flexible, resilient heat insulating material.

9. Bandage according to any of the previous claims, wherein the main body is adapted to be opened at its front side in order to allow application from the back over an ankle/heel region.

10. Bandage according to any of the previous claims, wherein the free ends of the heel support portions which in use are intended to be directed towards each other are dimensioned not to overlap below the heel region.

11. Bandage according to any of the previous claims, wherein the width of the stay portions in the ankle area is adapted so as to enclose the ankles.

5 12. Bandage according to any of the previous claims, wherein it comprises at least one stabilizing band for application helically over the main body and below the heel region.

10 13. Bandage according to any of the previous claims, wherein the heat insulating material of the main body is neoprene rubber.

14. An ankle bandage constructed and arranged substantially as hereinbefore described with reference to and as shown in the drawings.



Application No: GB 9601836.1  
Claims searched: 1-14

Examiner: L.V.Thomas  
Date of search: 25 April 1996

**Patents Act 1977**  
**Search Report under Section 17**

**Databases searched:**

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:  
UK CI (Ed.O): A5R (RBE, RBQ, RFB)  
Int CI (Ed.6): A61F 5/01, 13/06  
Other: Online:WPI

**Documents considered to be relevant:**

Category	Identity of document and relevant passage	Relevant to claims
A	GB 2241170 A (Burgoyne et al.) see p.2 l.21 - p.3 l.11	1
A	EP 0297026 A2 (Mikros USA, Inc.) see col.1 ll.29-51	1

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.